

On pages 38-39, delete the paragraph spanning page 38, line 26 through page 39, line 12, and replace it with the following paragraph:

-- A Western blot (Fig. 6) was prepared of lysates from spirochetes of *B. burgdorferi* strains JD1 and B31 and *B. garinii* strain IP 90 developed with serum from monkeys needle-inoculated and tick-inoculated with the JD1 spirochetes, and antibodies from the latter serum affinity purified off of whole live JD1 spirochetes. The affinity purified antibody recognized four antigens on Western blots of whole lysates from spirochetes of *B. burgdorferi* JD1. The antigens were named P1 (Relative molecular mass (Mr) 39-40,000), P2 (Mr 35-37,000), P3 (Mr 22-24,000) and P4 (Mr 18-19,000). These antigens were also recognized, as expected, by serum samples from needle-inoculated animals and by serum from tick-inoculated monkeys. In addition, this Western blot indicated that the affinity-purified antibodies recognized what appeared to be P1, P2, and P4 on B31 spirochetes and what appeared to be P1 (but with a slightly higher relative molecular mass) in *B. garinii* as well as an additional antigen of higher relative molecular mass. These two latter antigens were also exclusively recognized by the sera from both needle- and tick-inoculated animals. P1 was eventually identified as P39, also known as BmpA. The similar antigen present on IP90 spirochetes was tentatively identified as P39.5 and was shown on the Western blot discussed above. --

In the Claims

Cancel claims 10, 12, 13, 39, 67, 83, 100 and 102.

Amend claim 81 as follows.

D 11 sub 7 E1
81(Amended). A kit for diagnosing infection with a causative agent of Lyme Disease in a human or animal comprising a protein or peptide of claim 103.

Add new claims 103-107 as follows:

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~~104~~
103 (New). A recombinant or synthetic protein or peptide that reacts with antibodies to the causative agent of Lyme Disease in infected humans or animals, said protein or peptide selected from the group consisting of:
(a) an amino acid sequence of SEQ ID NO: 2;
(b) an amino acid sequence of SEQ ID NO: 14;
(c) an amino acid sequence encoded by SEQ ID NO: 3;
(d) an amino acid sequence encoded by SEQ ID NO: 7;
(e) an amino acid sequence encoded by SEQ ID NO: 11;
(f) an amino acid sequence of a fragment of (a) through (e) of at least five amino acids in length; and
(g) an amino acid sequence that differs from a sequence of (a) through (f) by up to four codon changes in the nucleic acid sequence encoding the amino acid sequence.

~~105~~

~~104~~ (New). The protein or peptide according to claim ~~103~~, wherein said fragment is at least eight amino acids in length.

~~106~~

~~105~~ (New). The protein or peptide according to claim ~~103~~, wherein said peptide or protein is coupled to a substrate that immobilizes said peptide or protein.

~~107~~

~~106~~ (New). The protein or peptide according to claim ~~103~~, wherein said peptide or protein is coupled to a detectable label or signal generating reagent.

~~108~~

~~107~~ (New). The kit according to claim 81, further comprising at least one of the group consisting of a substrate that immobilizes said peptide or protein, a detectable label, a labeled conjugate, and a signal generating reagent.